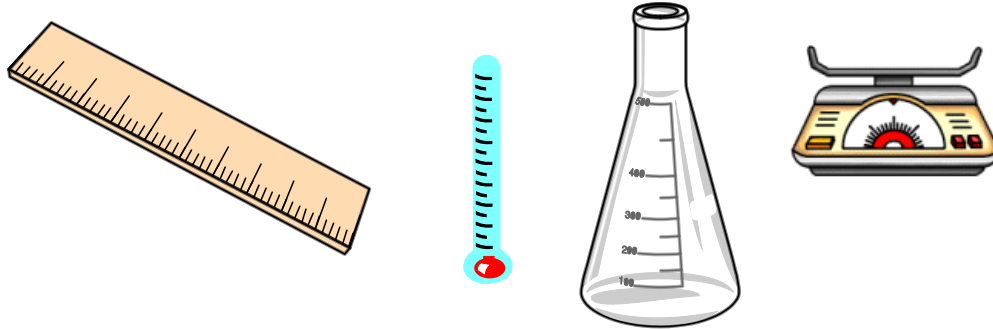


Measurement

Measurement makes up a big portion of science, physics in particular.

We must know how to make accurate measurements.



Sep 13-11:10 AM

Scientific Notation

Abbreviation of numbers

Ex:

14790000000000 m | 0.00000000007932 s

$1.479 \times 10^{13} \text{ m}$

$7.932 \times 10^{-11} \text{ s}$

Sep 13-11:10 AM

The Metric System

Time

1s = 9 192 631 770 cycles of
cesium radiation

Distance

1m = distance light goes in
1/299,792,458 of a Second

Mass

1kg = metric sausage

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A List of the Metric Prefixes



		Multiplier	
Prefix	Symbol	Numerical	Exponential
Giga	G	1,000,000,000	10^9
mega	M	1,000,000	10^6
kilo	k	1,000	10^3
hecto	h	100	10^2
deca	da	10	10^1
no prefix		1	10^0
deci	d	0.1	10^{-1}
centi	c	0.01	10^{-2}
milli	m	0.001	10^{-3}
micro	μ	0.000001	10^{-6}
nano	n	0.000000001	10^{-9}

Sep 13-11:59 AM

Metric Conversion

Converting between any two units

Feb 9-10:09 AM

Solving Problems Using Dimensional Analysis:

Units may be used as a guide in solving problems.

1. Decide what units you are given.
2. Decide what units are asked for.
3. List conversion factors. (Know exponents)
4. Set up "train tracks" so the units cancel.

$$\text{Units}_{\text{Desired}} = \text{units}_{\text{given}} \times \left(\frac{x_{\text{new units}}}{y_{\text{units given}}} \right) \times \dots$$

5. NOW, bust out the calculator.

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$$25.0 \text{ g} = \underline{\hspace{2cm}} \text{ kg}$$

$$= 25.0 \cancel{\text{g}} \left(\frac{1 \text{ kg}}{10^3 \cancel{\text{g}}} \right) \begin{matrix} 10^3 \\ 10^0 \end{matrix} \begin{matrix} \text{---} \\ \text{---} \end{matrix} 3$$

$$= 25.0 \div 1 \text{ EXP } 3 \quad \left| \quad 25.0 \times 10^{-3}$$

$$= 0.025 \text{ kg} \quad \left| \quad = 2.50 \times 10^{-2} \text{ kg}$$

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$$0.053 \text{ hm} = \underline{\hspace{2cm}} \text{ m}$$

$$= 0.053 \cancel{\text{hm}} \left(\frac{10^2 \text{ m}}{1 \cancel{\text{hm}}} \right) \begin{matrix} 10^0 \\ 10^2 \end{matrix}$$

$$= 0.053 \times 1 \text{ EXP } 2 \quad \left| \quad 0.053 \times 10^2$$

$$= 5.3 \text{ m} \quad \left| \quad 5.3 \text{ m}$$

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$$23.67 \text{ cl} = \underline{\hspace{2cm}} \text{ kL}$$

$$= 23.67 \cancel{\text{cl}} \left(\frac{1 \text{ kL}}{10^5 \cancel{\text{cl}}} \right) \overset{10^3}{\text{L}} \overset{10^{-2}}{\text{L}}$$

$$= 23.67 \div 1 \text{ Exp } 5$$

$$= 2.367 \times 10^{-4} \text{ kL}$$

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$$25.0 \text{ cm}^2 = \underline{\hspace{2cm}} \text{ dm}^2$$

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$$25.0 \text{ mm}^3 = \underline{\hspace{2cm}} \mu\text{m}^3$$

Sep 14-11:18 AM

$$2600 \text{ s} = \underline{\hspace{2cm}} \text{ h}$$

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29 m/s = _____ km/h

Dec 16-2:23 PM